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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/043,946	01/11/2002	Jong Sik Paek	AMKOR-017A	6383

7663 7590 04/03/2003

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EXAMINER

LEWIS, MONICA

ART UNIT PAPER NUMBER

2822

DATE MAILED: 04/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/043,946

Applicant(s)

PAEK, JONG SIK

Examiner

Monica Lewis

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 19-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 19-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### **DETAILED ACTION**

1. This action is in response to the amendment filed January 27, 2003.

#### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1-11 and 19-25 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Specification***

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 10 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what is meant by the following: a) "the first semiconductor die do not contact the second surface of any of the leads" (See Claim 10). The Applicant has stated in claim 1 that the "first semiconductor die being attached to the second surface of each of the leads." Claim 10 seems to contradict claim 1. Claim 11 depends directly or indirectly from a rejected claim and are, therefore, also rejected under 35 U.S.C. 112, second paragraph for the reasons set above.

*Claim Rejections - 35 USC § 102*

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claims 1-6, 9-11 and 19-25 are rejected under 35 U.S.C. 102(a) as being anticipated by Huang et al. (U.S. Patent No. 6,198,171).

In regards to claim 1, Huang et al. ("Huang") discloses the following:

- a) a plurality of leads (326) (See Figure 7);
- b) first surface (328a) (See Figure 7);
- c) second surface (330) disposed in opposed relation to the first surface (See Figure 7);
- d) a third surface (328b) disposed in opposed relation to the second surface, the first surface being oriented between the second and third surfaces (See Figure 7);
- e) a first semiconductor die (304) defining opposed first and second surfaces and including a plurality of bond pads (308) disposed on the first surface thereof, the first surface of the first semiconductor die being attached to the second surface of each of the leads (See Figure 7);
- f) a second semiconductor die (310) defining opposed first and second surfaces and including a plurality of bond pads (314) disposed on the second surface thereof, the first surface of the second semiconductor die being attached to the second surface of the first semiconductor die (See Figure 7);
- g) a plurality of conductive connectors (316) electrically connecting the bond pads of the first and second semiconductor dies to respective ones of the leads (See Figure 7); and
- h) an encapsulating portion (332) applied to and at least partially encapsulating the leads, the first and second semiconductor dies, and the conductive connectors (See Figure 7).

In regards to claim 2, Huang discloses the following:

- a) conductive connectors comprise conductive wires (See Figure 7).

In regards to claim 3, Huang discloses the following:

- a) the conductive wires comprise first and second conductive wires (See Figure 7);
- b) the bond pads of the first semiconductor die are electrically connected to respective ones of the first surfaces of the leads by first conductive wires (See Figure 7);
- c) the bond pads of the second semiconductor die are electrically connected to respective ones of the second surfaces of the leads by respective ones of the second conductive wires (See Figure 7).

In regards to claim 4, Huang discloses the following:

- a) a die paddle defining opposed top and bottom surfaces, the leads being disposed about the die paddle (See Figure 7); and
- b) the first surface of the first semiconductor die further being attached to the top surface of the die paddle (See Figure 7).

In regards to claim 5, Huang discloses the following:

- a) the first surface of the first semiconductor die is attached to the second surface of each of the leads and to the top surface of the die paddle by a first bonding means (322) (See Figure 7); and
- b) the first surface of the second semiconductor die is attached to the second surface of the first semiconductor die by a second bonding means (324) (See Figure 7).

In regards to claim 6, Huang discloses the following:

- a) the die paddle is formed to have a die paddle thickness (See Figure 7);
- b) each of the leads is formed to have a lead thickness between the second and third surfaces thereof (See Figure 7).
- c) the die paddle thickness is substantially equal to the lead thickness (See Figure 7).

In regards to claim 9, Huang discloses the following:

a) the encapsulating portion is applied to the leads such that the third surface of each of the leads is exposed within the encapsulating portion (See Figure 7).

In regards to claim 10, Huang discloses the following:

a) the first semiconductor die and the leads are oriented relative to each other such that each of the bond pads of the first semiconductor die is located between a respective pair of the leads so that the bond pads of the first semiconductor die do not contact the second surface of any one of the leads (See Figure 1).

In regards to claim 11, Huang discloses the following:

a) the first semiconductor die defines a peripheral edge (See Figure 7);

b) the conductive connectors electrically connecting the bond pads of the first semiconductor die to the leads are oriented inwardly relative to the peripheral edge of the first semiconductor die (See Figure 7).

In regards to claim 19, Huang discloses the following:

a) a plurality of leads (See Figure 7);

b) a first semiconductor die (304) including a plurality of bond pads disposed thereon, the first semiconductor die being attached to each of the leads (See Figure 7);

c) a second semiconductor die (310) including a plurality of bond pads disposed thereon, the second semiconductor die being attached to the first semiconductor die (See Figure 7);

d) electrically connecting the bond pads of the first and second semiconductor dies to respective ones of the leads (See Figure 7); and

e) an encapsulating portion applied to and at least partially encapsulating the leads, the first and second semiconductor dies, and the electrical connection means (See Figure 7).

In regards to claim 20, Huang discloses the following:

a) the electrical connection means comprises conductive wires (See Figure 7).

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In regards to claim 21, Huang discloses the following:

a) each of the leads defines opposed first (330) and second surfaces (328a) and a third surface (328b) which is opposed to the second surface, the first surface being oriented between the second and third surfaces (See Figure 7);

b) the bond pads of the first semiconductor die are electrically connected to respective ones of the first surfaces of the leads by respective ones of first conductive wires (See Figure 7); and

c) the bond pads of the second semiconductor die are electrically connected to respective ones of the second surfaces of the leads by respective ones of second conductive wires (See Figure 7).

In regards to claim 22, Huang discloses the following:

a) the encapsulating portion is applied to the leads such that the third surface of each of the leads is exposed within the encapsulating portion (See Figure 7).

In regards to claim 23, Huang discloses the following:

a) a die paddle, the leads being disposed about the die paddle (See Figure 7); and

b) the first semiconductor die being attached to the die paddle (See Figure 7).

In regards to claim 24, Huang discloses the following:

a) the die paddle defines opposed top and bottom surfaces, with the first semiconductor die being attached to the top surface of the die paddle (See Figure 7).

In regards to claim 25, Huang discloses the following:

a) the first semiconductor die and the leads are oriented relative to each other such that each of the bond pads of the first semiconductor die is located between a respective pair of the leads so that the bond pads of the first semiconductor die do not contact any one of the leads (See Figure 7) .

*Claim Rejections - 35 USC § 103*

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as obvious over Huang et al. (U.S. Patent No. 6,198,171) in view of Song (Korean Publication No. 2002049944).

In regards to claim 7, Huang discloses the following:

a) encapsulating portion (See Figure 7).

In regards to claim 7, Huang fails to disclose the following:

a) the bottom surface of the die paddle is exposed.

However, Song discloses a die paddle that has a bottom surface that is exposed (See Figure 3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Huang to include a die paddle that has a bottom surface that is exposed as disclosed in Song because it aids in providing a simplified fabricating process (See Abstract).

Additionally, since Huang and Song are both from the same field of endeavor, the purpose disclosed by Song would have been recognized in the pertinent art of Huang.

In regards to claim 8, Huang discloses the following:

a) encapsulating portion is applied to the leads such that the third surface of each of the leads is exposed within the encapsulating portion (See Figure 7).

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*Conclusion*

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 703-305-3743.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 703-308-4905. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722 for regular and after final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ML

March 26, 2003

  
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